We claim:

1. A liner for supporting a workpiece concentric within a hollow spindle of a turning machine, comprising:

an elongated sleeve member having a central through-opening extending along its entire length, for slidably receiving therein said workpiece, the outer diameter of said liner being slightly smaller than the inner diameter of the spindle such that the liner is slidably received within the spindle, said through-opening being concentric with the hollow spindle and having a cross-dimension slightly greater than the outer cross-dimension of the workpiece such that the workpiece is slidably received within said through-opening, said liner being of a unitary construction and engaging and supporting said workpiece along its entire length within the liner to minimize out-of-concentric rotation of the workpiece during the machining process.

2. The unitary liner of claim 1 further comprising a flange disposed at one end of said liner for securing said liner at the spindle terminus opposite the chuck end of the turning machine.

3. The unitary liner of claim 2 wherein said flange includes one or more openings extending therethrough for receiving fasteners for securing said liner to the spindle terminus.

4. The unitary liner of claim 3 wherein said fastener openings extending through said flange generally parallel with the central axis of said liner.

5. The unitary liner of claim 1 wherein said central through-opening has a circular cross-section.

6. The unitary liner of claim 1 wherein said central through-opening has a square cross-section.

7. The unitary liner of claim 1 wherein said central through-opening has a hexagonal cross-section.

8. The unitary liner of claim 1 wherein said central through-opening has an octagonal cross-section.

9. A liner for a hollow spindle of a turning machine, comprising:

an elongated tubular member having a central through-opening extending along its entire length and concentric with the spindle,

said liner having an outer diameter slightly smaller than the interior diameter of the spindle to provide minimal play between the liner and the spindle, said central through-opening of said liner having an outer diameter or maximum cross-dimension slighter greater than the outer diameter of a tubular workpiece or the maximum cross-dimension of a square, hexagonal or octagonal workpiece, so as to slidably receive the bar stock within the central through-opening with minimal play between the workpiece and the liner, and a flanged shoulder portion arranged at one end thereof for securing said liner to the terminus end of the spindle,

said liner being of a unitary construction and supporting said bar stock along its entire length within the liner to minimize wobble of the workpiece during the machining process.

10. The unitary liner of claim 9 wherein said central through-opening has a circular cross-section.

11. The unitary liner of claim 9 wherein said central through-opening has a square cross-section.

12. The unitary liner of claim 9 wherein said central through-opening has a hexagonal cross-section.

13. The unitary liner of claim 9 wherein said central through-opening has an octagonal cross-section.

14. The unitary liner of claim 9 wherein said liner is constructed from a plastic material.

15. The unitary liner of claim 14 wherein said plastic material is polyurethane.

16. A method of minimizing out-of-concentric rotation of a workpiece within a hollow spindle of a turning machine during a machining process, said method comprising the steps of:

a. providing a workpiece, said workpiece being defined by a piece of tubular or bar stock;

b. providing a unibody, elongated tubular member having a central through-opening extending along its entire length and concentric with the spindle, said liner having an outer diameter slightly smaller than the interior diameter of the spindle to provide minimal play between the liner and the spindle, said central through-opening of said liner having an outer diameter or maximum cross-dimension slighter greater than the outer diameter or maximum cross-dimension of the workpiece, so as to slidably receive the workpiece within the central through-opening with minimal play between the workpiece and the liner, and a flanged shoulder portion arranged at one end thereof for securing said liner to the terminus end of the spindle, said liner being of a unitary construction;

c. placing said liner within the hollow spindle of said turning machine and securing the flange of said liner to the terminus end of the spindle; and

d. slidably placing the workpiece through the central through-opening of said liner such that the distal end of the workpiece extends beyond the distal end of said liner such that the distal end of the workpiece may be machined and supporting the workpiece along its entire length within the liner to minimize wobble of the workpiece during the machining process.

17. A method for manufacturing a spindle liner for a turning machine to a customer's specification for a preselected workpiece, said method comprising the steps of:

a. determining the outer dimension of the workpiece;

b. determining the inner diameter of the spindle of the turning

machine upon which the workpiece will be machined;

c. selecting an appropriate core element for a mold approximating the dimensions of the workpiece;

d. selecting an appropriate tubular mold section having an inner diameter slightly less than the inner diameter of the spindle, which in turn will approximate the outer diameter of the liner once formed;

e. selecting an appropriate flange-forming mold portion providing a mounting flange of the appropriate dimensions to be mounted upon the back end of the turning machine;

f. selecting an appropriate top or end cap to fit the selected tubular mold portion;

g. assembling the flange-forming mold portion to the tubular mold position;

h. securing the central core element interiorly of the tubular mold portion by placing the top cap atop the open end of the tubular mold portion and securing the upper end of the core element by way of a fixing element;

i. introducing plastic material in a molten state into the interior of the mold so formed through a fill hole provided in the top cap until the interior void of the mold is substantially filled; and

j. allowing the liner once formed to set up for an appropriate length of time to permit the plastic material to cure to a sufficient state of hardness.

18. A mold for forming a spindle liner for a turning machine, comprising:

a hollow elongated tubular portion;

a hollow mounting-flange forming portion arranged at one end of said tubular portion, the hollow portion of said mounting-flange forming portion being in communication with the hollow portion of said tubular portion and having a interior diameter greater than interior diameter of the hollow portion of said tubular portion;

an end cap for placing over the opposing open end of said tubular portion

for enclosing the hollow portion of said tubular and mounting-flange forming portions, said end cap having an opening therein allowing for the introduction of molten material therethrough to substantially fill the hollow portion of the mold; and

a core member extending concentrically within the interior of the mold for defining the cross-dimension of an axial through-opening of the spindle liner once formed, said core element being secured at its opposing ends to maintain said core member in proper concentric orientation within the interior of said mold.

19. The mold of claim 18 wherein said core member is secured in proper concentric orientation within the interior of the mold by a pair of threaded pin elements disposed at the opposite ends of said core member.

20. The mold of claim 18 wherein the core member is selected dependant upon the maximum cross-non-dimension of the workpiece to be machined.